

Rhodora

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NEW ENGLAND BOTANICAL CLUB

Conducted and published for the Club, by

MERRITT LYNDON FERNALD, Editor-in-Chief

JAMES FRANKLIN COLLINS

CHARLES ALFRED WEATHERBY

LUDLOW GRISCOM

CARROLL WILLIAM DODGE

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SOME NEW PLANTS FROM THE GASPÉ PENINSULA

M. L. FERNALD AND C. A. WEATHERBY

THE completion a few years ago of the Perron Boulevard, the automobile road around the coast of the Gaspé Peninsula, has made available an area of great botanical interest which was formerly considered remote. In 1905 in one of his geological reports, Robert Chalmers wrote: "The roads are the worst in Eastern Canada, especially between Fox river and Sainte Anne des Monts"; consequently, until very recently this area has been difficult of access. In the same report Chalmers summarized his description of the region as follows:

"Most of the coast district between Fox river and Valley river [near Ste. Anne des Monts] is unsettled, except at the fishing stations . . . it forms an undulating plateau from 700-800 feet to 1,200-1,500 feet high,¹ trenched by rivers and brooks, and with a steep face to the gulf. The banks . . . are angular, abrupt, and without that rounded appearance so characteristic of ice-worn surfaces. . . . Inlets at the mouths of rivers and brooks are enclosed between steep, angular bluffs, the upper brow of these being sharp in outline and bearing no traces of ice-action. Nor do the higher hill sides and summits exhibit any erosion by ice, subaerial decay and waste having apparently had full sway here. These features char-

¹ Chalmers's accurate account has become much stretched in the account published by the Department of Highways and Mines (Provincial Tourist Bureau) where the tourist is told: "After leaving the shore line, the road begins to climb. It climbs, and climbs some more, until it reaches 2,000 feet above sea level, near Marsouis (or Marsouins), the next village of any importance. But even that dizzy height will seem as a 'slight declivity' by the time the traveller reaches the summit, or extreme altitude of the 'Boulevard,' at Ruisseau-Vallée, where the highway reaches 2,600 feet."—*The Gaspé Peninsula*, 101 (Quebec, Dept. Highw. and Mines, April, 1930).

acterize the coast district from Fox river, or Anse au Vallon, to Ste. Anne des Monts, this part of the coast being higher than that to the east or to the west."¹

In discussing the floras of unglaciated areas of eastern Canada I wrote of this particular region: "Very similarly, many western or endemic species are confined to the cliffs and steep V-shaped valleys from Ste. Anne des Monts to Fox River, the region emphasized by Chalmers as practically unglaciated and where Coleman describes the valley of Rivière à la Martre which 'is cut 700 or 800 feet below the general level and is typically V-shaped. This and the striking re-entrants . . . show that it has never been shaped to any important degree by a valley glacier'; la Rivière aux Marsouins, with 'its valley . . . of the same type, deeply cut and V-shaped with bedrock showing at the bottom,' and beautiful Lac Pleureuse, whose 'steep shores present well-marked spurs which a glacier would have truncated.' This great stretch of essentially unglaciated and bleak coast is rugged, ragged and difficult to traverse. . . It is, consequently, almost unexplored, but such very slight examinations as have been made indicate that here is one of the chief regions of Gaspé for localized cordilleran types: *Woodsia scopulina* (Tourelle to Marsouin . . .), *Agrostis idahoensis* (Lac Pleureuse), *Carex misandroides* [rare Eastern representative of two local species of Alberta] (Lac Pleureuse . . .), *Salix laurentiana* [endemic ally of two Pacific Coast species] . . . , *Descurainia Hartwegiana* (Marten River . . .), *Astragalus aboriginum* [now found to be an endemic species of Mt. St. Pierre] . . . and *Oxytropis viscida* [also an endemic, *O. gaspensis*], (Mt. St. Pierre), *Hackelia deflexa*, var. *americana* (Mt. St. Pierre to Mont Louis . . .), *Artemisia frigida* (Cap Chat to Mont Louis) and *Arnica gaspensis* (Cap Tour-elle)."²

In early July last, making a tour of the Perron Boulevard with members of our families, we spent one day, joined by Dr. G. Ledyard Stebbins, Jr., in a partial survey of Mt. St. Pierre, and other days, unfortunately without Stebbins's companionship, in very superficial collecting on the more available talus-slopes and cliffs from near Rivière à la Martre to Gros Morne. Our botanizing was necessarily very limited but younger and more agile botanists, especially with

¹ Chalmers, Geol. Surv. Can. Ann. Rep. n. s. xvi. 253a (1905).

² Fernald, *Persistence of Plants in Unglaciated Areas of Boreal America*, Mem. Gray Herb. ii. (Mem. Amer. Acad. xv.) 299, 300 (1925).

the skill of Stebbins in cliff-climbing, will find this region rich in novelties. Most of the easily available plants of interest, such as *Carex concinna* R. Br., *Androsace septentrionalis* L. and *Erigeron compositus* Pursh, var. *trifidus* (Hook.) Gray, were already known from the area; but we extended the known range of *Antennaria subviscosa* Fernald from Bic in Rimouski County to the high calcareous seawalls of Gaspé (Rivière aux Marsouins, Cap Pleureuse and Gros Morne), and that of *Arnica chionopappa* Fernald westward along the St. Lawrence to Gros Morne, and secured the usual quota of *Taraxacum* for further study from the cliffs and talus.

A few of the plants are of such unusual interest as to merit special discussion.

CAREX (§ MONTANAE) **clivicola**, n. sp. Laxe cespitosa, *C. novae-angliae* simulans, omnibus partibus tamen major; vaginis basilaribus castaneis vel purpurascens, superioribus saepe puberulis vel hirtellis; foliis 2 mm. latis flaccidis saturate viridibus longioribus 2–3 dm. longis; culmis elongatis subcapillaribus curvantibus plerumque folia superantibus 2–3.5 dm. altis; spica mascula lineari-cylindrica attenuata sessili 5–10 mm. longa, squamis obtusis oblongo-ovatis stramineis vel brunneis albo-marginatis; spicis femineis 2 vel 3 subdistantibus omnibus sessilibus 4–7-floris ebracteatis vel ima bractea angustata foliacea 1–3.5 cm. longa aliquando subtensa; squamis ovatis obtusis mucronatisve 2.5–3 mm. longis 1.5–2 mm. latis stramineis brunneotinctis late albescenti-marginatis saepe erosis; perigyniis fusiformibus hirtellis 3.5–4 mm. longis 1–1.2 mm. latis basi lutescente spongiosa elongata, rostro brevi 0.4–0.8 mm. longo breviter bidentato paulo deflexo; achaenio trigono anguste obovoideo 2 mm. longo.—QUEBEC: dry thicket at head of calcareous slaty talus of inner slope, Mt. St. Pierre, Gaspé Co., July 5, 1931, *Fernald, Weatherby & Stebbins*, no. 2411.

Carex clivicola is nearest related to *C. novae-angliae* Schwein. and to *C. Rossii* Boott. In the shape of its perigynia it is very similar to the former but in *C. novae-angliae* the perigynia are only 2.5–3 mm. long and the pistillate scales are shorter, narrower and tapering to sharp tips. The foliage of *C. novae-angliae* is narrower than in *C. clivicola* and usually as long as or even longer than the culms; the lowest pistillate spike is usually definitely stalked, and the commonly stalked staminate spike has lanceolate or lance-ovate acuminate scales. From *C. Rossii* the newly proposed species at once differs in its laxer habit, its lack of short basal culms, smooth and flaccid leaves, blunt scales and slenderly fusiform, rather than strongly gibbous perigynia.

The type-station of *Carex clivicola* is a notable one, for the dry calcareous talus of the slope just below is characterized by a strange assemblage of species, many of them southern, many others rare or otherwise unknown or almost unknown south of the St. Lawrence. Here various species, such as *Acer pensylvanicum* L. and *Cornus rugosa* Lam., reach essentially their northeastern limits. The dominant color of the vegetation is supplied by the extensive thicket of particularly whitish "BOIS D'ARGENT," *Elaeagnus argentea* Pursh, while *Rosa blanda* Ait., often only 1 dm. high and with flowers scarcely 3.5 cm. broad, *Prunus depressa* Pursh, of New England river-gravels and seeming strangely out of place on dry subalpine rock-talus, and *Amelanchier gaspensis* (discussed in this paper), all abound. A whitish-leaved endemic representative of the cordilleran *Astragalus aboriginorum* Richardson (also discussed in this paper) here mingles with the endemic *Oxytropis gaspensis* Fern. & Kelsey, RHODORA, xxx. 123 (1928) and Fernald, l. c. 141, t. 171. With them or close by grow *Erigeron compositus*, var. *trifidus* (Hook.) Gray of arctic and northwestern America,¹ *Anemone multifida* Poir., of cordilleran (including Andean) range, the arctic and cordilleran *Draba stylaris* Gay, and other species making up a xerophytic association very unusual in eastern Canada. It is in the dry thicket at the top of this wind-swept talus that *Carex clivicola* forms a carpet. The habitat is much more like an arid ridge of the cordilleran region than the rich mesophytic forest of eastern Canada and northern and western New England in which *C. novae-angliae* abounds.

SAXIFRAGA CERNUA L., var. **latibracteata**, n. var., a forma typica recedit foliis caulinis superioribus reniformibus vel late ovatis basi cordatis vel subcordatis; bracteis dilatatis, inferioribus reniformibus vel suborbicularibus vel late ovatis plerumque lobatis, mediis ovatis vel ellipticis vel obovatis.—Baffin Island; Gaspé Peninsula, Quebec; Keewatin and Alberta. BAFFIN ISLAND: Cockburn Island, Pond's Inlet, August 20, 1904, *L. E. Borden*, Herb. Geol. Surv. Can. no. 62,973; Frobisher Bay, August, 1927, *C. S. Sewall*, no. 294. QUEBEC: calcareous sea-cliffs and rock-slides by the St. Lawrence, west of Rivière à la Martre, July 26, 1922, *Fernald & Pease*, no. 25,121, July 2, 1931, *Fernald & Weatherby*, no. 2449; mossy hornblende-schist at about 915 m., "Mt. Logan" (Mt. Mattaouisse), July 22, 1922, *Fernald & Pease*, no. 25,120; cold chimneys and rock-shelves at about 915–1000 m., south side of Fernald Pass, Mt. Mattaouisse, July 8, 1923, *Fernald, Griscom, Mackenzie, Pease & Smith*, no. 25,820; brook at head (about 1000 m. alt.) of Pease Basin, between Mts. Logan and Pembroke, July 13, 1924,

¹ See Fernald, RHODORA, xxx. 122 (1928).

Pease & Smith, no. 25,821; dripping cliffs and chimneys at head (about 1000 m. alt.) of Pease Basin, July 16, 1923, *Griscom & Pease*, no. 25,823; wet rocks and chimneys, alt. 825–1125 m., Gorge of Northeast Branch of River Ste. Anne des Monts, Tabletop Mts., August 5, 1923, *Fernald, Dodge & Smith*, no. 25,824 (TYPE in Gray Herb.). KEEWATIN: Fullerton, September 4, 1910, *J. M. Macoun*, Herb. Geol. Surv. Can. no. 79,247. ALBERTA: Rocky Mts., 1857–8, *Bourgeau*; Elbow River, June–July, 1897, *J. Macoun*, Herb. Geol. Surv. Can. no. 20,133; Malique Lake, July 19, 1908, *S. Brown*, no. 1270; Lake Louise, July 17, 1906, *S. Brown*, no. 663.

Typical *Saxifraga cernua* of Eurasia and of our arctic and high-alpine regions has the upper cauline leaves truncate to cuneate at base and all the bracts or all but the very lowest narrow (mostly linear-lanceolate to oblong-linear), the change from foliage-leaves to bracts being abrupt. This typical *S. cernua* extends south in America to the Torngat region of Labrador, very locally to the Shickshock Mts. of Gaspé (*Pease & Smith*, no. 25,822) and to the high mountains of Colorado and Utah.

It is probable that var. *latibracteata* includes some specimens referred to *S. cernua*, forma *bulbillosa* Engl. & Irmscher, Pflanzenr. iv¹¹⁷. 274, fig. 65, N (1916). Their figure 65, N might well have been drawn from the Fullerton material (*J. M. Macoun*, no. 79,247) which they cite as belonging to forma *bulbillosa*. Their description, however, makes no mention of divergence of the bracts from those of the common European and Arctic forms. In America var. *latibracteata* is so general a tendency of the species and such a departure from the forms (unless forma *bulbillosa* be excepted) recognized by Engler & Irmscher that it seems to us a definite geographic variety, comparable with frondose variations in other groups which occur about the Gulf of St. Lawrence.

AMELANCHIER **gaspensis** (Wiegand), n. comb. *A. sanguinea*, var. *gaspensis* Wiegand, RHODORA, xiv. 139 (1912).

In his revision of *The Genus Amelanchier in eastern North America*¹ Wiegand separated *A. sanguinea* (Pursh) DC. and *A. humilis* Wiegand from the cordilleran group represented by *A. florida* Lindl. by the fact that the two former have the "Margins of the leaf forming an angle at the apex," in *A. florida* and its allies the "Margins of the leaf forming a rounded or sub-truncate, rarely retuse, apex." The diagnostic characters of *A. sanguinea* used by Wiegand were: petals 11–20 mm. long; sepals 4 mm. long; hypanthium open and flat;

¹ Wiegand, RHODORA, xiv, 117–161 (1912).

racemes more or less drooping; upper veins of leaves running straight to the apex of the teeth, "not so in the var." *gaspensis*, which was separated by its essentially glabrous quality and by "the veins of the leaves prominently anastomosing before reaching the teeth." In his discussion Wiegand recognized that var. *gaspensis* is not very satisfactorily placed with *A. sanguinea* and that its relationship is as much with *A. humilis* and the group of *A. florida*, saying:

"The var. *gaspensis* is a perplexing form. It varies much in stature and in habitat, as well as in leaf-outline and dentation. The leaves suggest an intermediate condition between this species [*A. sanguinea*] and *A. humilis* especially in the venation. In its more glabrous nature it approaches *A. florida*; but the general appearance of the majority of the specimens, both when in flower and when in fruit, suggests that it is better to retain this form in *A. sanguinea* until further field study renders it better understood. More field work on all the *Amelanchiers* of Gaspé is very desirable."

Since the publication of *Amelanchier sanguinea*, var. *gaspensis* much material has accumulated. This forms a consistent series and maintains the venation and the glabrous characters first assigned to it. It departs from *A. sanguinea* in other characters: its leaves are usually so broadly rounded or subtruncate at summit that our own collection of the past summer went by Wiegand's key directly to *A. florida* and two of the collections made by Rousseau were distributed under the latter name; in well developed leaves there are only 6-13 pairs of primary veins, in *A. sanguinea* 10-16; its racemes are quite erect, or in shade merely ascending, but not drooping; the sepals are only 1.5-3.5 mm. long, in *A. sanguinea* 3.5-4.5 mm. long; and the very narrow (oblancheolate) petals are only 6-9 mm. long.

Differing from *A. sanguinea* in its glabrous or quickly glabrate foliage, its leaves commonly more rounded or subtruncate at summit, its fewer nerves with anastomosing tips, its erect racemes with glabrous or barely pilose rachis and pedicels, its shorter and glabrous or promptly glabrate sepals, and its shorter petals, and occupying a clearly circumscribed area northeast of the range of *A. sanguinea*, *A. gaspensis* seems to be quite as definite a species as any in the group.

The affinity of *A. gaspensis* with the *A. florida* complex of the cordilleran region and with the geographically intermediate *A. humilis* has been noted. From the former series it is at once distinguished by its thinner leaves with at most pale green lower surfaces, the cordilleran series having the coriaceous leaves glaucous beneath. From *A. humilis* it differs in its glabrous or promptly glabrate leaves

with more rounded or subtruncate summits and fewer veins, the glabrous or only sparsely pilose young rachis and pedicels (densely tomentose in *A. humilis*), the glabrous or promptly glabrate calyx and the narrower petals.

The following collections, all from the Gaspé Peninsula or neighboring counties of QUEBEC, belong to *A. gaspensis*. GASPÉ CO.: talus of calcareous cliffs near Cape Rosier, *Pease*, no. 20,216; prairies humides près de la Rivière York, *Victorin, Rolland, Brunel & Rousseau*, no. 17,431; marais saumâtres derrière le Barachois de Coin-du Banc, *Victorin et al.*, no. 17,434; ravin humid de la Grande-Coupe, Percé, *Victorin et al.*, no. 17,435; rocky bank, Percé Mt., Percé, August 16–20, 1904, *Collins, Fernald & Pease*; limestone detritus, Mt. Ste. Anne, Percé, July 24, 1905, *Williams, Collins & Fernald*; Grand River, June, 1903, *G. H. Richards*; dry slaty talus of cliffs, Lac Pleureuse, *Fernald, Dodge & Smith*, no. 25,840; Mont Louis, *Victorin*, no. 28,582; calcareous slaty talus toward summit of Mt. St. Pierre, *Fernald, Weatherby & Stebbins*, no. 2451; thickets near mouth of R. Ste. Anne des Monts, August 3–17, 1905, *Collins & Fernald*; slaty ledges by R. Ste. Anne des Monts, *Fernald, Griscom, Mackenzie & Smith*, no. 25,839. BONAVENTURE CO.: alluvial woods, mouth of Bonaventure R., July 31, 1902, *Williams & Fernald*, (TYPE of *A. sanguinea*, var. *gaspensis*); gravelly beaches and flats, Bonaventure R., August 5–8, 1904, *Collins, Fernald & Pease*; rivage de la R. Matapédia, *Victorin*, no. 28,694. MATANE CO.: banks of Matane R., August 5, 1904, *F. F. Forbes*; calcaires gaspésiens, Ste.-Flavie, *Rousseau*, nos. 24,537; 24,554. RIMOUSKI CO.: dry ledges, Bic, July 15–18, 1904, *Collins & Fernald*; dry calcareous rocks and gravel, Bic, *Fernald & Pease*, no. 25,136; chemin de fer, Bic, *Rousseau*, nos. 26,241, 26,259; bois de conifères sur le conglomérat, Cap Enragé, Bic, *Rousseau*, no. 26,672.

RUBUS IDAEUS L., var. *eucyclus*, n. var., a var. *anomalo* differt turionibus cinereo-tomentulosis, pedicellis calicibusque valde glandulosis—QUEBEC: a small colony in the midst of an extensive area of var. *canadensis* Richardson, slightly west of Ruisseau à Rebours, Gaspé Co., July 3, 1931, *Fernald & Weatherby*, no. 2452 (TYPE in Gray Herb.).

Rubus idaeus, var. *eucyclus* is the third "reversionary" variation known in the species with simple or merely lobed and rounded leaves or with ternate leaves with rounded leaflets. In foliage it is quite like the much-discussed European var. *anomalus* Arrhenius (*R. obtusifolius* Willd., *R. Leersii* Bab.), but its tomentulose canes and glandular pedicels and sepals show that it is a mutation from the common var. *canadensis*, in the midst of which var. *eucyclus* was growing. The superficially very similar var. *Egglestonii* (Blanchard) Fernald, RHODORA, xxi. 97 (1919) (*R. idaeus*, var. *anomalus* Fernald, RHODORA, ii. 195, t. 20 (1900), not Arrhenius; *R. Egglestonii* Blanchard,

Torrey, vii. 140 (1907)) is a parallel "reversionary" variation from var. *strigosus* (Michx.) Maxim.

In var. *anomalus*, to quote Focke, "the restraining process, by which the form of the foliage leaves was so curiously modified, extended also to the carpellary leaves, and . . . the axes of these was [were] shortened, so that they did not close and completely envelop the ovules. Of the two ovules in each carpel, one uniformly pined away at a very early stage; the other developed itself during the blooming time in the normal way, but only few carpels were produced. In most cases, however, they dried up whilst the flowering was in progress; and, though some appeared to be fertilized, yet seed entirely failed to ripen. The infertility of the plant, I saw, was correlative to the character of its foliage; and we must look upon it as only a curious form of *R. idaeus*, which deviates from the type, so far as the form of the leaf is concerned, in the same manner that *Fragaria monophylla* deviates from typical *Fragaria vesca*."¹

As I earlier pointed out, var. *anomalus* is not always sterile, for Babington² stated that it occasionally produces good seed, enough to have spread the plant to scattered stations. Whether var. *eucyclus* is sterile or fertile we cannot yet state. The colony, when discovered, was only in bud or very young anthesis.

ASTRAGALUS scrupulicola, n. sp. FIG. 1. Perennis; radice longissima verticali spongiosa caudicibus cespitosis; caulibus numerosissimis adscendentibus 1.5-3 dm. altis dense cinereo-tomentulosis; foliis 5-8 cm. longis; stipulis inferioribus late ovatis vel suborbicularibus obtusis basi connatis pallide brunneis chartaceis cinereo-tomentulosis 4-6 mm. longis, superioribus lanceolato-attenuatis dense adpresseque pilosis; foliolis 9-11 oblongo-lanceolatis obtusis sessilibus valde adscendentibus 1-2.5 cm. longis 3-7 mm. latis utrinque juventute saltem valde cinereo-tomentulosis jugis remotis; pedunculis axillaribus erectis cinereis 3-10 cm. longis; racemis laxe 7-17-floris anthesi 2-5 cm. maturitate 6-10 cm. longis; bracteis lanceolatis oblongisve brunneis scariosis cinereo-pilosis; pedicellis 1-2 mm. longis dense cinereis adscendentibus vel maturitate saepe arcuato-recurvantibus; calice dense adpresseque piloso pilis albescens, tubo 2.5-3 mm. longo, dentibus lanceolato-subulatis 1.5-2 mm. longis; corolla lactea 7-9 mm. longa, vexillo obovato retuso 1 cm. longo 6 mm. lato ungue lato 2.5 mm. longo; alis 7-9 mm. longis, ungue anguste lineari 3.5 mm. longo, limbo cuneato apice retuso 3 mm. lato, lobo basali unguiculato circa 1 mm. longo; carina obtusa lunata; leguminibus elliptico-lanceolatis falcatis compressis 2-3.2 cm. longis medio 4-6 mm. latis

¹ Focke, Journ. Bot. x. 27 (1872), translated from Oesterr. Bot. Zeitschr. (1870) 98.

² Babington, Journ., Bot. xvi. 85 (1878).

breviter pilosis apice acutis basi in stipitem gracilem 5–7 mm. longum calicem valde superantem attenuatis, suturis crassis non sulcatis; seminibus oblique reniformibus olivaceis paullo nitidis 2.2–3 mm. longis.—Gaspé County, QUEBEC: dry talus of slaty cliffs, northern face of Mt. St. Pierre, at mouth of Rivière à Pierre, August 14, 1923 (old fruit), *Fernald & Smith*, no. 25,872; talus slope near top of Mt. St. Pierre, July 29, 1927 (old fruit), *Kelsey & Jordan*, no. 73; “schistes” concassés, Mt. St. Pierre, 19 juillet, 1928 (old fruit), *Rousseau*, no. 31,182; slaty talus, Rivière à Pierre, July 20, 1928 (fruit), *Pease*, no. 20,144; calcareous “slate-pencil” talus, north slope of Mt. St. Pierre, July 4, 1931 (young fruit), *Fernald & Weatherby*, no. 2454 and in Pl. Exsicc. Gray.; calcareous slaty talus, southern slope of Mt. St. Pierre, July 5, 1931 (flowers and young fruit), *Fernald, Weatherby & Stebbins*, no. 2455 (TYPE in Gray Herb.).

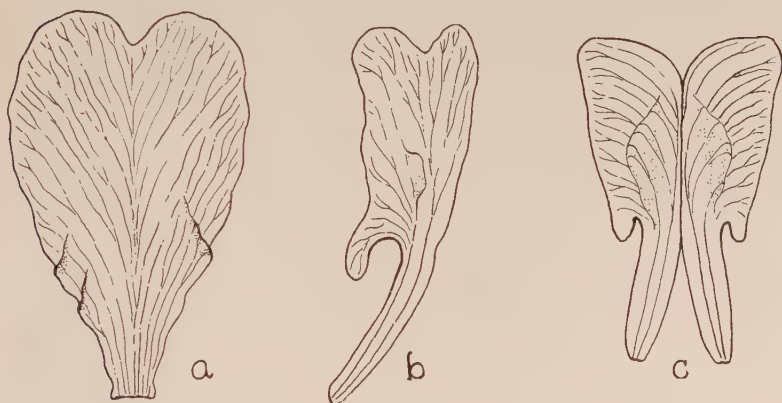


Fig. 1, *ASTRAGALUS SCRUPULICOLA*: a, vexillum; b, wing; c, keel, laid open; all $\times 5$.

The earlier collections in over-ripe fruit were identified, on account of their cinereous pubescence and superficial characters, with the rare *Astragalus aboriginorum* Richardson in Frankl. Journ. App. 746—reprint, 18 (1823)—a species with an ungrammatical name which was soon altered to *A. aboriginum* Spreng. Syst. iv². 288 (1827). The name *A. aboriginorum* (or its grammatical substitute) has covered an aggregate of plants in western North America; but the original and very detailed description of Richardson (of a plant from Carleton House on the Saskatchewan) emphasizes the blackish-pilose calyx, the corolla whitish or bluish with the carina “eminente caerulea,” and the wings with an obovate basal lobe. Rydberg, in monographing

the group, as *Atelophragma*, says: "the typical form, agreeing with Richardson's description and specimens, is apparently very rare. Representative specimens have been collected between Lake Winnipeg and Bear Lake, *Richardson*; Rocky Mountains and Saskatchewan, *Bourgeau*."¹ The Bourgeau material from the type locality (Carleton on the Saskatchewan), represented in the Gray Herbarium, has been approved by Rydberg with a mark of affirmation. In this the calyx is black-hairy and with calyx-lobes 2.5–3 mm. long; the wings have the broad basal lobe as described by Richardson and as illustrated by Hooker, as *Phaca aboriginorum* Hook. Fl. Bor.-Am. i. 143, t. lvi. (1830). In the Saskatchewan material (*Bourgeau*), as well as in specimens of Burke's from the east side of the Rocky Mts., sent by Hooker to Gray, the flowering raceme is rather dense, and this character is well displayed in Hooker's plate.

The plant of Mt. St. Pierre in Gaspé, of which we were fortunate enough to secure a belated flowering individual, shows in the flowers marked differences from authentic *Astragalus aboriginorum*. Its flowering raceme is very lax. The calyx is white- (not black-) pilose and with teeth much shorter than in the plant of the Saskatchewan. The corolla is milk-white throughout; the carina not "eminente caerulea." The basal lobe of the wings is narrower and unguiculate, with a rounded sinus; not obovate, with an acute sinus, as shown in Hooker's figure. The legumes, too, are narrower and more compressed.

We are unable to match *Astragalus scrupulicola* with any of the western species recognized by Rydberg in his revision of *Atelophragma* and, therefore, are proposing it as another endemic of the Gaspé Peninsula. The name refers to the habitat: the sharp and angular pencil-like talus into which the rock of Mt. St. Pierre and some of the adjacent headlands disintegrates.

In this talus *A. scrupulicola* is associated with the endemic *Oxytropis gaspensis* Fernald & Kelsey and *Carex clivicola* (described in this paper), with the Gaspé endemic, *Amelanchier gaspensis* (also discussed in this paper) and with other highly localized representatives of species of the Great Plains or the western Cordillera. We are indebted to Dr. H. M. Gilkey for the drawings of details of the corolla shown in FIG. 1.

GRAY HERBARIUM.

¹ Rydb. Bull. Torr. Bot. Cl. lv. 120 (1928).

SALIX GLAUCA L. AND ITS ALLIES IN THE ATHABASCA-
GREAT SLAVE LAKE REGION¹

HUGH M. RAUP

(Plate 218)

THE writer has collected eighty-nine sheets of *Salix glauca* or its close relatives, in good fruiting condition, in the Athabasca-Great Slave Lake region during the past five summers. The greater part of these fall rather definitely into one group, and appear to be inseparable from the European specimens of *S. glauca* in the Gray Herbarium.

There have been varying opinions as to the presence of typical *Salix glauca* in America. Rydberg² regarded it as rare and "probably confined to the extreme northeast" (he also cites a specimen from Alaska). Coville³ states that he was unable to separate Alaskan specimens from some of the European material. Schneider,⁴ in monographing the group, reviewed the situation and said, "I agree with Coville that the North American forms are very similar to those of *S. glauca*, but they are in my opinion not fully identical with the typical *S. glauca* L. s. str."; and in another place, "In looking over the copious and well collected American specimens before me, I hesitate to designate them as typical *S. glauca*, nor am I willing to regard them as a separate species until a closer study of the circumpolar willow has convinced me of one fact or the other." He states that the American material seems to differ from the typical *S. glauca* "by the usually well developed stipules, by the longer pedicels of the fruits which normally are from one-half to twice longer than the gland, and by the tendency of the filaments to become almost glabrous."

The writer's material shows none of these differences. Stipules are present only in a few cases, though the specimens were collected both early and late in the season. The pedicels of the capsules are variable in length from a very nearly sessile condition to 1.5 mm., being sometimes twice as long as the gland, but more often shorter. These conditions vary greatly in the same ament. It is of note that the pedicels

¹ Published by permission of the Director of the National Museum of Canada, and during the writer's tenure of a National Research Fellowship in the Biological Sciences.

² Rydberg, P. A. Bull. N. Y. Bot. Gard. i, 271 (1899).

³ Coville, F. V. Proc. Wash. Acad. Sci. iii, 321 (1901).

⁴ Schneider, C. Bot. Gaz. lxvi, 326 (1918).

and glands of the European material in the Gray Herbarium show the same wide variation. In forming a description of typical *S. glauca*, following Linnaeus¹ and Enander,² Schneider makes the capsules sessile³ but adds part of a description of Lapland material by Andersson,⁴ who states that the capsules have very short pedicels. The evident variability of this character both in European and American material makes it of little value in an attempt to separate the two. The same is true of the amount of hair on the filaments, the material at hand matching most of the European in having a small amount at the bases of these. Floderus⁵ states that the style in *S. glauca* is cleft to the base, and uses this character to separate it from other related species, but European specimens in the Gray Herbarium show styles quite variously cleft, as do also the American. There is a slight tendency toward greater division of the style in the European, but not enough to merit a separation. The leaves vary greatly on different plants and on the same plant, both as to shape and pubescence, but the same variations are to be found in the European specimens. Other characters used by Floderus, such as the color of the bracts and the lobing of the nectaries, also fail to merit a division.

The larger part of the writer's collection closely resembles many of the specimens labeled *S. glauca* var. *glabrescens* Schneider, but it seems unnecessary to give them varietal rank in view of the above. Another group of specimens appears to answer the description of *S. glauca* var. *acutifolia* of Schneider and to match specimens so labeled by him. This variety seems to be a consistent one, with smaller, more narrowly lanceolate or elliptic, thinly hairy leaves with slightly and irregularly denticulate margins. Schneider has assigned the Alaskan material to this variety. The remaining sheets show notable variations from the above. Several of them match precisely a specimen of *S. desertorum* Richardson in the Gray Herbarium. This specimen was collected by Richardson at Fort Franklin, and is evidently a part of the original material. Between these plants and *S. glauca* there is a series of intermediate transition forms, some of them appearing on the same plant (Plate 218). In Andersson's first treatment of *S. desertorum*⁶ he considered it as a sub-species of *S. glauca*, stating that it

¹ Linnaeus, C. Fl. Lapp. 290 (1737).

² Enander, S. J. Stud. Salic. Linnés Herb. 51, 54, 59 (1917).

³ Schneider, C. Ibid. 320.

⁴ Andersson, N. J. Salic. Lap. 73, fig. 21 (1845).

⁵ Floderus, B. in C. A. M. Lindman's *Svensk Fänerogamflora* 186-187. Stockholm (1918).

⁶ Andersson, N. J. Öfv. K. Vet. Akad. Förh. 127 (1858).

was a well defined form and that transition forms between it and true *S. glauca* were occasionally seen. Later¹ he mentioned it as a species, but named as varieties of it certain forms which have been shown to be *S. brachycarpa* by Schneider.² When making it a sub-species of *S. glauca* Andersson also described it as an extreme arctic modification of this species.

In the semi-open prairies about 20 miles west of the upper Slave River, and again on the eastern slopes of the Caribou Mountains about 70 miles west of the prairies, were found shrubby willows with small, reticulate-veined leaves and short aments. These were found to match very closely specimens called *S. chlorolepis* Fernald var. *antimima* by Schneider,³ and to resemble closely certain specimens from Fort Churchill, Hudson Bay, and from Mt. Albert, on the Gaspé Peninsula, labeled *S. brachycarpa* Nutt. by him. Study of authentic specimens of *S. chlorolepis* Fernald⁴ and of *S. brachycarpa* Nutt.⁵ indicate that the above material from Gaspé and Hudson Bay, as well as that collected by the writer, is much much more closely allied to the latter species. *S. chlorolepis* is well defined by its large, green bracts and by its entirely glabrous capsules, while the specimens in question differ from *S. brachycarpa* chiefly in their less pubescent leaves and twigs. *S. brachycarpa* is a hoary plant occurring in the Gaspé region and in the central Rocky Mountains, and is consistent through many collections. The less pubescent form has long been noted in the east as being quite distinct and also consistent. With the addition of the Churchill specimens and the writer's it appears to be a good geographic variety, forming a sub-arctic representative of the species, and the following new combination is therefore proposed:

SALIX BRACHYCARPA Nutt., var. ***antimima*** (Schneider), n. comb. *S. chlorolepis*, var. *antimima* Schneider, Bot. Gaz. lxvi. 339 (1918).

Within the region from which the collections have been made, the above groups are rather clearly segregated. Typical *S. glauca*, of wide range in Europe and North America, is confined to rich woods or the muskeg borders of lakes and streams. Most of the specimens are from the gently rolling upland west of the upper Slave River.

¹ Andersson, N. J. DC. Prod. xvi². 281 (1868).

² Schneider, C. Ibid. 332.

³ See Schneider, C. Ibid. 339.

⁴ See Fernald, M. L. RHODORA vii: 185-186 (1905).

⁵ See Nuttall, T. N. Am. Sylva i: 69 (1843).

Var. *acutifolia*, a well marked form with a wide-ranging consistency in Alaska and the northern Cordilleran region, is confined to the rocky uplands of the pre-Cambrian country east of the Slave River district. It has a range somewhat similar to that of another willow common in Alaska and entering the Great Slave Lake basin, *S. alaxensis*. Although the *acutifolia* group is confined to the semi-barren rocky country, typical *S. glauca* grows in the least exposed and richest woods at the eastern end of Great Slave Lake. *S. desertorum* was collected on the bleak, exposed, rocky shores on the north side of McLeod Bay, Great Slave Lake, while the forms approaching *S. brachycarpa* were seen only in the semi-open prairies and on the upper slopes of the Caribou Mountains west of the Slave River. *S. desertorum*, however, may prove to be nothing more than an occasional dwarfed form of the woodland *S. glauca*. Its rarity is attested by its sporadic occurrence in herbaria, although the regions in which it grows have yielded several other species of willows. It should also be noted that it has never been found in the extreme arctic regions, but only in districts near or in contact with wooded areas where *S. glauca* occurs.

The writer is indebted to Dr. M. O. Malte and to Professor M. L. Fernald for helpful suggestions.

GRAY HERBARIUM,
HARVARD UNIVERSITY.

HITCHCOCK'S "FIELD WORK FOR THE LOCAL BOTANIST."¹—Anyone with a sufficiently strong bent for local botanical investigation will achieve results of value, however isolated or otherwise at a disadvantage he may be—witness, for instance, Howell of Oregon, Frost of Vermont and Brendel of the "Flora Peoriana." The opportunity to make observations which will really add to the sum of knowledge is open to all who possess an active interest in field botany and fairly ready access to wild places. Many, however, miss it because of ignorance of methods or a fallacious impression that there is no longer anything to be found out except, perhaps, in the remote portions of the earth.

For such persons Dr. Hitchcock endeavors, in the pamphlet at hand, to provide encouragement, guidance and information. He has chapters, brief and simply put, on such subjects as woody plants in their winter condition, fruits and seeds and the dissemination of the latter, seedlings,

¹ HITCHCOCK, A. S. *Field Work for the Local Botanist*. Published by the author, 1867 Park Road, Washington, D. C. 58 pp. \$1.10.



Photo H. M. Raup.

Figs. 1 and 2, *SALIX GLAUCA*; figs. 3 5, *S. DESERTORUM* (Note intergradation of leaf- and ament-characters).

phenology, pollination, plant associations, floristics and the making of herbaria, each treated as possibly pointing the way to fruitful lines of investigation. For the beginner particularly, the little work should offer much helpful suggestion.—C. A. W.

Vol. 33, no. 395, including pages 213 to 230, was issued 14 November, 1931.

ERRATA

- Page 8, line 16, *for* crowed, *read* crowded,
 " 10, " 32, *for* unto, *read* into.
 " 44, " 3 of foot-note, *for* Kungl, *read* Kungl.
 " 49, " 31, *for* would had, *read* would have had.
 " 67, " 21, *for* Ostendfeld, *read* Ostenfeld.
 " 96, last line of caption, *for* *oxycoccus*, *read* *Oxycoccus*.
 " 98, line 16, *for* *laracina*, *read* *laricina*.
 " 101, " 22, *for* *callithrix*, *read* *callitrix*.
 " 109, " 34, *for* *Thelypteris*, *Phegopteris*, *read* *Thelypteris Phegopteris*.
 " 111, " 31, *for* *maritima*, *read* *patula*.
 " 112, " 3, *for* *palustre*, *read* *palustris*.
 " 159, " 6 *for* *floerkeana*, *read* *Floerkeana*.
 " 165, " 27, *for* (Willd.), *read* (Willd.).
 " 168, " 35, *for* *analogous*, *read* *analogous*.
 " 179, " 43 *for* *Toupinambaultiosl* *egit*, *read* *Toupinambaultios legit*.
 " 179, " 45, *for* *SWEEDEN*, *read* *SWEDEN*.
 " 189, " 19, *for* *Johnson*, *read* *Johnston*.
 " 207, " 22, *for* *geminata*, *read* *subgeminatus*.
 " 214, " 6 and 33, *for* *NEODOICA* *read* *NEODIOICA*.
 " 220, " 27, *for* *sl'ta*, *read* *släta*.
 " 220, " 28, *for* *sträfhåriga*, *read* *sträfhåriga*.
 " 220, " 30, *for* *spärlich*, *read* *spärlich*.
 " 227, " 12, *for* *Rhodendron*, *read* *Rhododendron*.

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